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ABSTRACT

Attempts to enhance students' appreciation for the scientific nature of psychology typically focus on training in scientific reasoning and methodology along with direct involvement in research activities. The underlying assumption appears to be that given sufficient knowledge and experience, students' perceptions of the discipline will change as part of their normal cognitive development. An alternative approach is to view changes in beliefs about psychology as an attitude change process in which information constitutes the arguments of a persuasive message. Current "dual process" models of persuasion (Petty & Cacioppo, 1986; Chaiken, 1987) suggest several ways in which class activities and assignments can be modified to make the information supplied in a typical course have greater impact on underlying attitudes about the scientific nature of psychology. Examples of classroom interventions are discussed, and ethical issues associated with developing technologies that explicitly target belief change as a course objective are also considered. Contains 17 references. (Author)

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# Teaching as Persuasion: Altering Students' Views on Scientific Psychology

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A version of this paper was presented at the 1995 American Psychological Association Convention in New York, NY. This is a draft version; please do not quote without permission. For further information, please contact James Friedrich, Department of Psychology, Willamette University, 900 State Street, Salem, OR, 97301. Electronic mail may be sent to: jfriedri@willamette.edu.

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Abstract

Attempts to enhance students' appreciation for the scientific nature of psychology typically focus on training in scientific reasoning and methodology along with direct involvement in research activities. The underlying assumption appears to be that given sufficient knowledge and experience, students' perceptions of the discipline will change as part of their normal cognitive development. An alternative approach is to view changes in beliefs about psychology as an attitude change process in which information constitutes the arguments of a persuasive message. Current "dual process" models of persuasion (Petty & Cacioppo, 1986; Chaiken, 1987) suggest several ways in which class activities and assignments can be modified to make the information supplied in a typical course have greater impact on underlying attitudes about the scientific nature of psychology. Examples of actual classroom interventions are discussed, and ethical issues associated with developing technologies that explicitly target belief change as a course objective are also considered.

# Teaching as Persuasion: Altering Students' Views on Scientific Psychology

The undergraduate curriculum in psychology has generally been characterized by a commitment to training in the scientific method, promoting the view that psychology is both a basic science and a "technology" for addressing practical problems in human and animal behavior (McGovern, Furumoto, Halpern, Kimble, & McKeachie, 1991). Traditionally, however, required undergraduate courses in statistics and research design, as well topical courses that have strong methodological components, have taken on what I believe is an overly narrow focus. Specifically, they have most directly concerned themselves with the mastery of what might be called the "technical facts" — differences between correlational designs and true experiments, the nature of control groups, the logic of statistical hypothesis testing, and the like. To be sure, these are certainly appropriate points of focus for such classes. But in a larger sense, a perhaps more fundamental educational concern is often overlooked in the process. That concern involves students' epistemological beliefs and, more specifically, their attitudes toward psychology as a science.

Although we tend to assume that anyone with a solid command of research design fundamentals would necessarily endorse a view that psychology is a science, I suspect that this assumption is often false. Students may very well gain a passing mastery of the technical aspects of good design and experimentation without ever dealing with the underlying "belief" issues. And I would argue that in the absence of a receptive epistemological outlook, our efforts in methodologically-oriented courses may well be like the biblical parable in which seed is sewn on rocky soil. It briefly takes root, but quickly withers and dies.

My comments center around the notion that teaching needs to be seen as a persuasive process and not merely as one of information transmission. Indeed, as researchers in psychological science, our goals are to persuade others that a certain view of "reality" is a valid and compelling one, and our empirical findings are best thought of as arguments by which we attempt to persuade some larger audience. Students' forgetting curve for course-acquired material is legend, however, and I believe most classroom instructors would probably be quite pleased if at least the perspective or "attitude" developed in their courses somehow endured for students after

most of the specifics and technical details had long since faded away.

If we treat teaching as a persuasive process, then we as psychologists would do well to make use of current theory and research on attitude change processes as we design the undergraduate experience and prepare our classes. If we wish to convince our students that psychology is a truly scientific enterprise, then how do we most effectively get such a message across?

## Why Care About Attitudes?

Before talking about specific persuasion processes, it may be worth noting why people's underlying epistemological beliefs need addressing. Numerous studies have noted the general public's ambivalence about the scientific nature of psychology (Wood, Jones, & Benjamin, 1986). Psychology still tends to be viewed primarily as a healing profession (an aspect of our work of which we should be proud, by the way). Although sometimes deemed a science in the vocabulary of the public, that same public also seems to consider day-to-day personal experiences as sound training in that science (Wood et al., 1986).

Although we might wish for a more favorable and accurate public perception, one might be inclined to adopt a "sticks and stones may break my bones, but names can never hurt me" outlook — that is, if it weren't for the fact that public opinion has serious consequences for the discipline and for the society it serves. One need look no further than the recent legislative proposal to eliminate all future funding for the Social, Behavioral, and Economic Sciences Directorate of the National Science Foundation (Azar, 1995). Representative Robert Walker (R-PA) — chair of the House Science Committee — has indicated he believes NSF "wandered into" this non-scientific area in an effort to be "politically correct" (quoted in Azar, 1995). Public opinion <u>can</u> break our bones!

And what about the student in the classroom, far removed from the corridors of power? As teachers, we would do well to consider the possible linkages between students' attitudes toward psychology as a science and our effectiveness in achieving some of our other educational goals. In some of my own research (Friedrich, in press), I have found that the degree to which students perceive psychology as a science is positively correlated with expressed willingness to seek therapy for personal problems, the perceived benefit of serving as research participants in a formal

"subject pool", recommendations for more required laboratory courses in the major, interest level in required lab courses, exam performance, and even ratings of teacher performance and effectiveness. (Given the role played by student course evaluations at teaching-focused colleges, we should be reminded that students are not all that far from the corridors of power after all!) Yes, these results are merely correlational, but they suggest that student attitudes toward the scientific nature of psychology merit more serious attention than they have generally been given in the past.

## How Do We Go About Changing Attitudes?

The reasons underlying people's misperceptions of psychology and its scientific status are varied and complex (see Camac, 1995, for an overview of contributing factors). Multiple causes often call for multiple approaches to intervention, but I would like to focus here on what contemporary research in persuasion has to say about the process of changing attitudes in the classroom. The literature on attitudes and persuasion is immense (Eagly & Chaiken, 1993), and I could not even presume to touch upon all the relevant material. Two models that have emerged in recent years, however, strike me as deserving special attention: Richard Petty and John Cacioppo's (1986) Elaboration Likelihood Model, and Shelly Chaiken's (1987, Chaiken, Liberman, & Eagly, 1989) Heuristic-Systematic Model. Although these two theories differ in several subtle but important ways, they are both considered "dual process" models of attitude change emerging out of the cognitive response tradition in persuasion research.

These dual process models suggest that persuasive messages are processed in two often mutually incompatible ways. When people are a) motivated, and b) able to process the content of a persuasive message, they engage in a relatively reflective "central" or "systematic" form of processing. Under such conditions, the message itself elicits a variety of favorable and unfavorable "cognitive responses", and it is these responses that ultimately determine attitude change. Attitudes formed in this way tend to be relatively enduring, resistant to change, and predictive of behavior. In contrast, when respondents are unmotivated and / or unable to systematically process a message, agreement tends to be determined by "peripheral" or "heuristic" cues such as likability or attractiveness of the communicator, or the mere quantity (rather than quality) of information in the message. Attitudes formed in this manner, as one might expect, have been found to be relatively unstable and poor predictors of behavior.

Although I suppose I should only speak for myself here, I would think that as educators, we should be most interested in promoting central / systematic processing in response to our messages. We want to be convincing because of the weight of our evidence and not merely because of our degrees, our positions of authority, or our long-windedness (although colleagues have told me that, these days, we can ill afford to waste what few sources of leverage we have!). The question is, does central / systematic processing occur routinely and automatically in the classroom? Anyone who has endured questions like "Do we need to write this down?", "Is it going to be on the test?", and "Do we need to review our notes between classes?" is already aware of the pressures that exist toward peripheral or heuristic processing (e.g., "It's true because the teacher said it's going to be on the next exam...). I don't mean to suggest that students rarely think carefully about what is discussed in class. Nevertheless, the technical complexity of the material and the different "world view" associated with a rigorously empirical approach to studying behavior tends to limit both the motivation and the ability of many students to process our messages critically. As a consequence, our messages often fall on that rocky soil, briefly taking root but all too often withering away.

## Classroom "Interventions"

So how might an application of these dual process theories of persuasion be used to guide our teaching, specifically with respect to students' views of psychology as a science? I would like to illustrate with two examples, based on some of my own research (Friedrich, 1990, 1995). One represents what might be considered a success story and the other more of a cautionary tale.

One study involved the use of an essay assignment (Friedrich, 1990). Students often do a credible job of jotting down information from lectures and the readings as to why psychology is viewed as a science. However, such information is often processed in kind of a passive, peripheral manner; students may fail to reflect critically on the information and organize it into a coherent whole. It struck me that one way in which I might increase motivation for central / systematic processing would be to ask students to write a persuasive essay explaining why psychology is a science. In writing an essay, students have to review the arguments, organize them, and marshal them in a compelling fashion. In other words, they have to think more critically about them than if they were simply memorizing them for a test. Notice, however, that the focus here is on how this

impacts attitudes, rather than simply on how it affects comprehension and retention.

I tested this idea with a sample of introductory students I was teaching at the time. Half were assigned at random to this essay topic for a paper that came due about two weeks into the term, after we had finished chapters on research methods and social psychology. The other half served as a control condition, writing on an essay topic related to social psychology but unrelated to research methodology or philosophy, per se. All students attended the same classes and did the same readings; only the topic of this brief paper was manipulated.

According to these dual process theories of persuasion, the more critical and extensive processing of arguments that would need to take place to write the "psychology as science" essay should enhance persuasion. (That assumes, of course, that the available arguments are high quality ones that generate favorable cognitive elaborations!) The resulting attitudes should be enduring and predictive of behavior. To explore this, I looked at two outcome measures. Midway through the course, students had to do a second paper. One option was to conduct and report the results of a simple study of their own design — a choice I felt would be reflective of favorable inclinations towards treating psychology as a science. The other option was to read a current events article from Time or Newsweek and apply some theory or study covered in the course to gain a deeper understanding of the event reported. Consistent with dual-process model predictions, 40% of the "psychology as science" essay group elected to do the experiment, compared to a significantly lower 16% of students in the "social psychology" essay group. The second outcome assessed was a self-report measure of attitudes towards psychology, collected at the end of the semester. Again as expected, students in the "psychology as science" essay condition expressed significantly greater agreement that psychology is indeed a science.

The second example I would like to discuss here grew out of an unexpected finding in the study just described. As previously noted, students were free to choose whether to do the experiment or the current events analysis paper at the midterm. Curiously, regardless of their initial essay condition, those who chose to do the experiment tended to be less persuaded that psychology is a science according to the self-report measure collected at the end of the term. Cognitive response models of persuasion suggest an interesting explanation. Students' first experiments are often poorly conceived and executed. This isn't to be critical of students; it simply

acknowledges the difficulty of doing sound, theoretically grounded and tightly controlled research with only a few weeks of introductory psychology "under one's belt." Nevertheless, cognitive response models of persuasion emphasize that if a message (or in this case, an experience) triggers unfavorable thoughts and counterarguments, little attitude change is likely to occur. In fact, such counterarguing may actually result in attitude change in the direction opposite to that being promoted by the message (Friedrich, Fetherstonhaugh, Casey, & Gallagher, in press).

Textbook accounts of studies are generally brief and highly sanitized — sort of the equivalent of a literature class's "Cliff Notes". In contrast, the real world experience of doing a study (particularly a naively-conceived one) makes one painfully aware of all the sampling, manipulation, and procedural pitfalls that we as professionals literally spend years of training just learning to avoid or minimize. The net result for students can often be a perception of bumbling imprecision and an absence of expected findings — negative cognitive elaborations in nearly anyone's book! Despite the fact that such exercises are often assigned in the hope of giving students a positive, hands-on introduction to the scientific method, the very experience of doing a "novice study" might actually serve to convince people that psychology is not so scientific after all.

I tested this notion more rigorously in a recent introductory psychology course I was teaching (Friedrich, 1995). All students completed a well-validated self-report measure of attitudes toward psychology as a science (Friedrich, in press) at the beginning of the term. A few days later, half of the students — assigned at random — were informed that they would be doing an experiment of their own design for a required term paper due in the latter part of the term. The other half of the students were informed that they would be doing a current events analysis along the lines of the one I just described, due at the same latter point in the semester. At the end of the course, I once again measured their attitudes towards psychology as a science. As I expected — or, should I say, as I feared? — students who did their own experiments were relatively <u>less</u> inclined to view psychology as a science. Essentially, the current events paper "control group" showed significantly enhanced agreement over the course of the semester, whereas the experimental paper group showed no change.

I don't mean to suggest by this that it is somehow inappropriate to assign students to do experiments. Certainly, students' attitudes toward the discipline are not the only change, or even

the primary change, we hope to effect in making such assignments. The point is instead that teaching is a persuasive process and that our efforts to educate can have unintended consequences. A careful examination of our teaching practices in light of contemporary research on persuasion might help us to minimize those unintended consequences and maximize our effectiveness. For example, it might make sense to have students tackle studies involving highly replicable phenomena in their early research attempts, and encourage them to do studies for which they have adequate resources to ensure a quality job. A colleague of mine who teaches research methods and is unfortunately forced to have his students do small-n studies always tells them "Don't worry if you fail to get the results you're looking for. I'm interested in your gaining experience and, with such small samples, significant effects would just be icing on the cake!" I confess to wondering, though, if the student rumblings I sometimes hear of how "my study bombed" might offset some of the benefits of their research experience.

## Receptiveness to the Message

Any complete account of the persuasion process has to take into account the characteristics of the audience. What kinds of characteristics in our students might affect their receptiveness to the message that psychology is a science? Certainly, their preexisting attitudes are potent determinants. Although students may come to the major with views of psychology and the nature of science that are relatively ill-defined, recent data suggests that undergraduates in psychology courses might suffer from the same kinds of general misperceptions noted in the general public (cf. Camac, 1995; Wood et al., 1986).

As it turns out, a general interest in and enjoyment of science may prove to be an important factor influencing students' receptiveness to our epistemological message. As part of a required senior-level course I taught in testing and psychometrics, a small sample of junior and senior majors completed the Strong Interest Inventory (Hansen & Campbell, 1985) — a career counseling instrument that, among other things, assesses students' interest patterns within Holland's (1973) six-component typology. It receives wide use in counseling settings because of a fairly extensive research base demonstrating greater job satisfaction when people are in work situations where the occupational typology matches their measured interest typology. Of specific interest here is the Investigative typology — for which the research scientist is a kind of prototype — and the Social

typology — for which social workers and guidance counselors are prototypes. Also of interest are the Strong's occupational scales for psychologist, guidance counselor, and social worker. These are empirically derived scales consisting of interest items that had significantly different "endorsement rates" for members of the specified profession as compared to a general normative reference sample.

The results of the small self-study we did as part of the course's laboratory experience were quite informative (Friedrich, 1991). Of the six Holland themes, academic psychologists generally score highest in the Investigative theme. Interestingly, virtually none of the students had the Investigative theme as their highest one, and just less than half had it anywhere in the top three of their six Holland-type scores. Higher scores on the Investigative theme were positively correlated with viewing psychology as a science as measured by an independent questionnaire (Friedrich, in press). Scores on the Social theme, however, showed no relationship.

Although students' scores on the occupational scales were not related to their attitudes toward psychology as a science, it seems worth noting that, along with having an Investigative score in one's "top three", higher scores on the psychologist scale were significantly correlated with higher grades in this testing and psychometrics course, greater self-reported interest in the material, and more favorable evaluations of teaching performance. In contrast, higher scores on the Social theme as well as on the social worker and guidance counselor scales tended to correlate negatively if at all with student performance, interest, and evaluation of the teacher's performance. Given the pattern of scores on the Investigative theme, it was unsurprising that students tended to score much higher on the social worker and guidance counselor scales than they did on the psychologist scale.

Perhaps the most striking finding in this course exercise had little to do with Strong profiles per se. Scores on the measure of belief in psychology as a science were highly positively correlated with interest in the material and evaluations of teacher performance (see also Friedrich, in press). Again, such findings are strictly correlational in nature, but they suggest the possibility that the "personal epistemologies" students bring to methodological (and other) psychology courses might lead many of them to disregard the message and disparage the source.

The results just discussed are based on a sample of students taking a highly quantitative

testing and psychometrics course. Interestingly, however, students' responsiveness to quantitative material may affect their receptiveness to messages in other courses, as well. For example, in a study exploring the effects of message quantitativeness on persuasion (Yalch & Elmore-Yalch, 1984), participants received a persuasive message regarding the expected growth in the use of bank "ATM" machines. The researchers varied the message presenter's perceived expertise as well as whether the message contained a quantitative expression of the arguments (e.g., "85% of people use these machines" versus "most people use these machines"). When messages were non-quantitative, people appeared to base their opinion on the message and were unaffected by the expertise of the communicator. However, when the message was quantitative (but nevertheless quite comprehensible), people appeared to rely significantly on perceived source expertise in formulating an opinion.

In summary, quantitative messages were not necessarily more persuasive, but quantitative information did tend to increase people's reliance on what might be considered a "peripheral" cue to agreement. Often, instructors introduce quantitative arguments as a way of illustrating the scientific nature of psychological research and as a way of making a presentation more logically compelling to a critical listener. But such experimental results give one cause to wonder whether this strategy for persuading students of psychology's scientific status might backfire. If a general discomfort with quantitative material (not uncommon among undergraduate psychology students) leads people to shift from central to more peripheral processing modes as the arguments get more "scientific", our best laid plans may indeed have unintended consequences in the presence of such audience characteristics.

## The Ethics of Classroom Persuasion

The perspective I've taken thus far emphasizes the fact that teaching is a form of persuasion and that contemporary theory and research on attitude change can be used in the classroom to influence important beliefs about psychology. Not every strategy employed in the pursuit of worthy goals, however, meets the ethical criteria that we subscribe to as professional educators. In particular, the conventional wisdom has always been that good teaching does not deliberately try to shape opinion. "Facts" are instead presented in an unbiased manner and are allowed to "speak for themselves." Students are then entirely "free" to either accept or reject these arguments in

formulating their own positions. Without delving too far into the freedom-determinism debate, there seems to be a consensus among teachers that manipulative, coercive, and deceptive strategies of influence are inappropriate in the classroom. The obvious concern here is that a systematic implementation of persuasion theory to the design of instruction might violate these shared values.

The hardcore behaviorists among us might well argue that student opinions are shaped by their classroom (and other) experiences, regardless of any explicit acknowledgment of our intentions or contingencies; the notion of students freely choosing a position based on neutral (non-deconstructed?) "facts" is a comfortable illusion. By such reasoning, we would seem to have little to lose by taking more explicit control of the contingencies controlling opinion change and leaving less to chance (cf. Skinner, 1971). The dual process models of persuasion discussed here, however, suggest a somewhat more palatable rationale for using persuasion theory to guide classroom strategies.

As noted in the research examples I've presented, central or systematic processing is generally viewed as the desired response to any classroom presentation. Having students believe what we say without thinking about it — instead relying on heuristics such as instructor status or personal likability — would violate most teachers' sense of effective and ethical instruction. By acknowledging the persuasive nature of the classroom environment, teachers can take steps to increase the impact of their messages precisely by increasing the degree to which people critically reflect on the arguments, as appeared to happen in the "psychology as science" essay study just described (Friedrich, 1990).

I would argue that teaching is not unethical simply because it can be persuasive. Quite the contrary, I would argue that good, ethical teaching is persuasive. It has its impact, however, by encouraging students to think deeply and critically about the information presented. It is incumbent on us as teachers to seek a balanced presentation of defensible positions upon which students can elaborate and reflect. Our arguments regarding the scientific nature of psychology represent a carefully considered position shared widely within the profession and endorsed by its official organizations. We regularly present these arguments to our students, and we can increase our effectiveness in this critical area by carefully designing our instruction to promote central, systematic routes to attitude formation and change.

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